A34 shape of the pillars. The pillars can also be defined by the square, rectangular, or some other regularly repeated shape, as opposed to circular holes.

Rewrite the heading on page ~~151~~ 152, line 6 to read as follows.

A35 X. Simulation Program For Hybrid Active Electronic and Optical Circuits

IN THE CLAIMS

Please add claims 4-56 as follows:

4. The anisotropically etched waveguide prism assembly of claim 1, wherein each one of the plurality of anisotropically etched waveguide prisms and the respective one of the plurality of optical devices combine to form a hybrid active electronic and optical circuit including an active electronic device and at least one of the plurality of optical devices.

5. The anisotropically etched waveguide prism assembly of claim 4, wherein the hybrid active electronic and optical circuit comprises an input/output light coupler and an evanescent coupling region, wherein the input/output light coupler is associated with the at least one optical device, and wherein the evanescent coupling region is at least partially formed from a gap portion that couples the input/output light coupler to the at least one optical device using evanescent coupling.

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6. The anisotropically etched waveguide prism assembly of claim 5, wherein the evanescent coupling region includes a tapered gap portion.

7. The anisotropically etched waveguide prism assembly of claim 6, wherein the tapered gap portion enhances coupling efficiency.

8. The anisotropically etched waveguide prism assembly of claim 5, wherein the evanescent coupling region includes a substantially constant thickness gap portion.

9. The anisotropically etched waveguide prism assembly of claim 5, wherein the evanescent coupling region is at least partially formed using an optically clear adhesive.

10. The anisotropically etched waveguide prism assembly of claim 9, wherein the optically clear adhesive secures the input/output light coupler to the evanescent coupling region.

11. The anisotropically etched waveguide prism assembly of claim 5, wherein the evanescent coupling region is at least partially formed from air.

12. The anisotropically etched waveguide prism assembly of claim 5, wherein the at least one optical device includes an optical waveguide having an upper cladding, and the evanescent coupling region and the cladding are formed of the same material.

13. The anisotropically etched waveguide prism assembly of claim 12, wherein the evanescent coupling region and the cladding are at least partially formed of glass.

14. The anisotropically etched waveguide prism assembly of claim 12, wherein the evanescent coupling region and the cladding are at least partially formed of a polyamide.

15. The anisotropically etched waveguide prism assembly of claim 12, wherein the evanescent coupling region and the cladding are at least partially formed of an electric insulator.

16. The anisotropically etched waveguide prism assembly of claim 15, wherein the electric insulator is also used to partially define active electronics in the hybrid active electronic and optical circuit.

17. The anisotropically etched waveguide prism assembly of claim 5, wherein altering an electric voltage applied to the active electronic device affects a free carrier distribution in a region of the at least one optical device, and thereby changes the effective mode index of the at least one optical device.

18. The anisotropically etched waveguide prism assembly of claim 17, wherein the at least one optical device includes a waveguide.

19. The anisotropically etched waveguide prism assembly of claim 5, wherein the evanescent coupling region is at least partially formed from an optically clean polymer.

20. The anisotropically etched waveguide prism assembly of claim 5, wherein the evanescent coupling region has a thickness of less than 0.5μ.

21. The anisotropically etched waveguide prism assembly of claim 6, wherein the tapered gap portion supports a first edge of the input/output light coupler at a height that is less than 100 microns above a second edge of the input/output coupler.

22. The anisotropically etched waveguide prism assembly of claim 21, wherein the second edge is in contact with a waveguide proximate the input/output coupler.

23. The anisotropically etched waveguide prism assembly of claim 21, wherein the second edge is out of contact with a waveguide proximate the input/output coupler.

24. The anisotropically etched waveguide prism assembly of claim 6, further comprising a ledge that supports the input/output light coupler above the tapered gap portion.

25. The anisotropically etched waveguide prism assembly of claim 24, wherein the ledge has a height that is less than 50 microns.

26. The anisotropically etched waveguide prism assembly of claim 25, wherein the ledge has a height of less than 3 microns.

27. The anisotropically etched waveguide prism assembly of claim 5, wherein the input/output light coupler includes a waveguide prism.

28. The anisotropically etched waveguide prism assembly of claim 6, wherein the input/output light coupler includes a waveguide prism.

29. The anisotropically etched waveguide prism assembly of claim 8, wherein the input/output light coupler includes a waveguide prism.

30. The anisotropically etched waveguide prism assembly of claim 29, wherein the at least one optical device includes a waveguide, the input/output light coupler includes a base, and the base is positioned to be substantially parallel to an axis of the waveguide.

31. The anisotropically etched waveguide prism assembly of claim 30, wherein the hybrid circuit includes an on-chip electronics portion positioned at a height that is substantially the same as a height of the base.

32. The anisotropically etched waveguide prism assembly of claim 5, wherein the input/output light coupler includes a waveguide grating.

33. The anisotropically etched waveguide prism assembly of claim 6, wherein the input/output light coupler includes a waveguide grating.

34. The anisotropically etched waveguide prism assembly of claim 8, wherein the input/output light coupler includes a waveguide grating.

35. The anisotropically etched waveguide prism assembly of claim 34, wherein the at least one optical device includes a waveguide, the input/output light coupler includes a base, and the base is positioned to be substantially parallel to an axis of the waveguide.

36. The anisotropically etched waveguide prism assembly of claim 35, wherein the hybrid circuit includes an on-chip electronics portion positioned at a height that is substantially the same as a height of the base.

37. The anisotropically etched waveguide prism assembly of claim 5, wherein the input/output light coupler is at least partially formed from a wafer disposed above the active electronic device and the at least one optical device.

38. The anisotropically etched waveguide prism assembly of claim 5, wherein the hybrid active electronic and optical circuit includes a focusing mirror.

39. The anisotropically etched waveguide prism assembly of claim 5, wherein the input/output coupler couples light into or out of a waveguide.

40. The anisotropically etched waveguide prism assembly of claim 5, wherein the hybrid active electronic and optical circuit includes a Fabry-Perot cavity.

41. The anisotropically etched waveguide prism assembly of claim 5, wherein the hybrid active electronic and optical circuit includes a wavelength division multiplexer modulator.

42. The anisotropically etched waveguide prism assembly of claim 5, wherein the hybrid active electronic and optical circuit includes an evanescent coupler.

43. The anisotropically etched waveguide prism assembly of claim 5, wherein the hybrid active electronic and optical circuit includes a diode.

44. The anisotropically etched waveguide prism assembly of claim 5, wherein the hybrid active electronic and optical circuit includes a transistor.

45. The anisotropically etched waveguide prism assembly of claim 1, wherein each anisotropically etched waveguide prism is a KOH etched waveguide prism.

46. The anisotropically etched waveguide prism assembly of claim 1, wherein the device portion includes a silicon insulator (SOI) flip chip portion.

47. The anisotropically etched waveguide prism assembly of claim 1, wherein the light coupling portion includes an optical/electronic I/O flip chip portion.

48. The anisotropically etched waveguide prism assembly of claim 1, further comprising an AWG.

49. The anisotropically etched waveguide prism assembly of claim 1, further comprising at least one evanescent coupling region associated with each one of the plurality of anisotropically etched light coupling portions, one of the at least one evanescent coupling regions extending between one of said plurality of anisotropically etched light coupling portions and one of the plurality of optical devices.

50. The anisotropically etched waveguide prism assembly of claim 49, wherein at least one evanescent coupling region is at least partially configured as a gap portion.

51. The anisotropically etched waveguide prism assembly of claim 50, wherein the at least one evanescent coupling region includes a tapered gap portion.

52. The anisotropically etched waveguide prism assembly of claim 1, wherein the anisotropically etched waveguide prism assembly includes one from the group of a p-n device, a field plated device, a Schottky device, a MOSCAP, and a MOSFET.

53. An etched light coupling portion assembly, comprising:

a device portion including a plurality of optical devices arranged in a first fixed pattern, each pair of said plurality of optical devices spaced by a first prescribed spacing;

a light coupling portion wafer including a plurality of etched light coupling portions, each

one of the plurality of etched light coupling portions arranged in second fixed pattern so as to correspond with a respective one of the plurality of optical devices, wherein each one of the pairs of said plurality of etched light coupling portions are spaced by a second prescribed spacing, the second prescribed spacing substantially equals the first prescribed spacing; and

an alignment portion that is used to align the light coupling portion wafer and the device portion, wherein each one of said plurality of etched light coupling portions are aligned with a respective one of said plurality of optical devices.

54. The etched light coupling portion assembly of claim 53, further comprising a securing portion wherein each one of said plurality of etched light coupling portions are secured relative to a respective one of said plurality of optical devices as aligned.

55. The etched light coupling portion assembly of claim 54, wherein the securing portion includes one from the group of an adhesive or a bonding.

56. A method of etching a light coupling portion assembly, comprising:

etching a device portion including a plurality of optical devices arranged in a first fixed pattern, wherein each pair of said plurality of optical devices is spaced by a first prescribed spacing;

etching a light coupling portion wafer including a plurality of etched light coupling portions, wherein each one of the plurality of etched light coupling portions are arranged in second fixed pattern so as to correspond with a respective one of the plurality of optical devices, and wherein each one of the pairs of said plurality of etched light coupling portions are spaced

by a second prescribed spacing, the second prescribed spacing substantially equals the first prescribed spacing; and

aligning the light coupling portion wafer and the device portion, wherein each one of said plurality of etched light coupling portions are aligned with a respective one of said plurality of optical devices.